

At the end of the 24 hours of continuous operation, again inspect the complete electrical system to see that everything is operating normally and prove to the satisfaction of the Engineer that all fixtures and equipment have been properly installed and are in operating condition.

Test all sign lighting systems, flashing beacons, and electro-mechanical changeable message signs in accordance with the test above, if they are connected to either the highway lighting system or to independent power sources. If they are not permanently connected to power at the time of installation, provide temporary power to each device and demonstrate, to the satisfaction of the Engineer, that they are properly installed and functioning as intended.

- (d) **Mechanical Test.** Following the successful completion of the 24-hour functional test, allow all high-mast lighting systems to operate normally for six days. During these 6 days, observe the system at night time for any defects in the luminaire or lamps. Demonstrate to the Engineer that each lowering device assembly is functioning properly by completing one lower and raise cycle on each assembly.
- (e) **Defects.** The above tests are to show that the luminaires, lamps, wiring, controllers, and related equipment have been properly installed and are in a satisfactory operating condition. Correct any defects to the satisfaction of the Engineer.

805.05. METHOD OF MEASUREMENT.

The tests *specified* will not be measured for payment. Include all costs of performing these tests in other items of work.

SECTION 806 POLES AND MAST ARMS

806.01. DESCRIPTION.

This work shall consist of furnishing materials and installing poles, mast arms, and pedestal poles for traffic signals, as well as highway lighting luminaires, in accordance with these Specifications and in reasonably close conformity with the locations and dimensions shown on the Plans or established by the Engineer.

806.02. MATERIALS.

Materials shall meet the requirements specified in AASHTO Standard Specifications for Structural Supports of Highway Signs, Luminaires, and Traffic Signals, and Section 700 of these Specifications.

806.04. CONSTRUCTION METHODS.

- (a) **General.** The design of the poles and mast arms shall be the responsibility of the manufacturer. The poles and mast arms shall be designed for a minimum of 80 mph (128 km/hr) wind velocity and shall meet all other design requirements of AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals.

Calculated stresses from design loading on poles and arms shall not exceed 50,000 psi (344.8 MPa) or 85 percent of ASTM yield strength, whichever is smaller. Certification shall be required that the material in poles meets the applicable ASTM specification for stress range the poles are designed to operate within. Minimum thickness of traffic signal steel poles and mast arms materials shall be 7 gauge.

The manufacturer shall submit shop and design drawings, and calculations in accordance with Subsection 105.02.

Mast arms may be mounted to the pole prior to erection of the pole. Take care not to damage the pole, mast arm, or finish during erection. If the finish is damaged, repair it at no additional cost in a manner approved by the Engineer.

Level anchor base poles with nuts or shims. If double nut leveling is used, fill the space between the concrete foundation and the pole base with a nonshrink grout.

Install all fasteners in accordance with the manufacturer's specifications.

Cast all structural castings in permanent molds.

- (b) **Poles.** The nominal mounting height of the luminaire or traffic signal shall be as shown on the Plans. All poles, with the exception of pedestal poles, shall be uniformly taper poles— either round or multisided— from bottom to top. Pedestal poles may be without taper. Make sure poles are straight and centered on the longitudinal axis. , Unless otherwise specified, furnish each pole with a reinforced handhole and weatherproof cover. Install a removable pole cap on each shaft (except pedestal poles). Provide all metallic poles with a grounding connection inside the base of the shaft, and ground them as shown on the Plans. Anchor bases may be either cast or structural plate.

- (c) **Mast Arms.** The mast arm shall be of the length shown on the Plans.

Design luminaire mast arms to support the weight of a 75 pound (34 kg) luminaire with a projected area of 3.3 square feet (0.30 square meters), and provide a smooth raceway for the wiring, supplying each with a slip-fitter tenon. Design traffic signal mast arms to support the required signal heads, as shown on the Plans.

806.05. METHOD OF MEASUREMENT.

Poles and mast arms, pedestal and post top poles of various types, sizes, and lengths will be measured by each unit installed.

806.06. BASIS OF PAYMENT.

The accepted poles and mast arms, measured as provided above, will be paid for at the contract unit price as follows:

- (A) TRAFFIC SIGNAL POLE AND MAST ARM EACH
- (B) TRAFFIC SIGNAL PEDESTAL POLE EACH
- (C) HIGHWAY LIGHTING POLE AND MAST ARM EACH
- (D) HIGHWAY LIGHTING POST TOP POLE EACH

Such payment shall be full compensation for furnishing all materials, equipment, labor, and incidentals to complete the work as shown on the Plans and these Specifications.